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Does It Really Matter?
What Does the Project Delivery System Bring to the Success or Failure of the Project?

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PART ONE: SELECTING THE APPROPRIATE PROJECT DELIVERY SYSTEM: SELECTION CRITERIA, PROJECT DELIVERY WORKSHOP AND TOOLS FOR MITIGATING RISK[1]

I. PRELIMINARY CONSIDERATIONS

Project delivery systems are intended to describe the roles of participants in a construction project, the formal relationships among them, the timing of events, the sharing of risks and rewards, and the management practices and techniques used to plan, design and construct the project.[2] Given the importance of making an appropriate project delivery selection, it is surprising that, in many cases, little or no objective analysis is involved in the selection process; the project delivery approach may simply be the method used on the owner's last project or the system with which the architect/engineer (typically the first construction professional retained by the owner) has the greatest familiarity.

Nearly every aspect of project success is in some way linked to the choice of the delivery system, including timely completion, control of design and construction costs, design and construction quality, effectiveness of owner input and control, maximizing opportunities for project financing, extent of collaboration among project stakeholders, and risk management and claims avoidance.[3] Early analysis and reasoned selection provide the best opportunity to save money, achieve schedule goals, maintain a positive relationship among the parties, and construct a facility that meets its intended use.

While selection of an appropriate project delivery system helps assure project success, selection of an improper method may not only result in project failure, but imposition of

significant liability upon the party responsible for making the improper choice. In *Williams Engineering v. David Goodyear*, the court held that the design professional, Williams, failed to meet its professional standard of care when project costs ballooned beyond the owner's expectation due, in part, to a poorly devised project delivery model.[4] In this case, the engineer of a sophisticated waterslide for an amusement park only presented the owner with the option of proceeding on a "cost plus fee" basis for both the engineer and contractor's work in order to meet the desired completion date. A proper project delivery exploration, however, would have revealed the owner's need to consider other options providing a cost cap or guaranteed maximum price ("GMP"), as the owner had no means to fund the project once actual costs greatly exceeded estimates. The failure to present those options resulted in the engineer's forfeiture of fee, and obligation to pay a significant portion of the cost overrun.

It is important to note that since the *Williams* case, the AIA standard documents between the owner and architect have been revised to require the architect to evaluate the project delivery method and proposed procurement process with the owner to ascertain the project requirements.[5] This makes practical sense since there is no certainty that any other professional will be involved in the project at its earliest stages with the practical knowledge to evaluate the proposed delivery method. This means, however, that the architect must be prepared to provide a knowledgeable and reasoned recommendation or advise the owner that other expertise should be retained to provide that analysis.

The goal of this article is to provide a framework for construction industry professionals and their legal counsel to make a more informed project delivery selection. The process involves an assessment of relevant project delivery characteristics, evaluation of constraints and opportunities presented by various project delivery approaches, and implementation of a

structured method for making the ultimate project delivery selection. While it is assumed that the reader possesses a basic knowledge of the various project delivery systems commonly used for domestic construction projects, Section II defines the key characteristics, as well as typical advantages and drawbacks of those systems. Section III identifies the critical project constraints that may limit the universe of possible project delivery systems for a given project, and the variables that often lead to the selection of a preferred approach. Section IV introduces the concept of the project delivery workshop as a tool to assist the owner with the selection process, and Section V includes a discussion of some practical tools that may be employed to mitigate the limitations of various approaches.

II. DESCRIPTION OF PROJECT DELIVERY SYSTEMS

The most common project delivery systems currently used in the United States are design-bid-build, construction management, and design-build. Integrated project delivery, a progressive approach popular in other countries, is becoming more prevalent in the United States, but has not yet become a dominant model.[6] For all of these models, there is a wide range of variation in structure and composition, and the benefits and weaknesses that differentiate these methods are highly dependent on specific project applications. The following is a brief description of each method, together with a listing of some of the commonly perceived benefits and weaknesses associated with each approach.

A. Traditional Project Delivery or Design-Bid-Build ("D-B-B")

1. "Single Prime" or General Contracting

The traditional, or D-B-B, project delivery model is a sequential process involving minimal overlap between the design, bidding, construction, closeout and commissioning phases. Under the D-B-B approach, the owner retains a design professional who is responsible for

translating the owner's vision, or program, into detailed plans and specifications or construction documents.[7] Once the drawings are completed, the design professional assists the owner in obtaining competitive bids or proposals, and awards a contract to a "single prime", or "general contractor." During the construction phase, the design professional performs construction administration services, such as site observation, review and certification of pay applications, review and approval of shop drawings and submittals, responding to requests for information, processing change orders, determining project completion and administering project closeout. The general contractor completes the work by employing various subcontractors, materialmen and suppliers, and possibly self-performing some aspects of the work.

There are many perceived benefits of the general contracting approach. Of greatest significance is the fact that there is relative certainty as to both project scope and price. Since bids are based upon complete plans and specifications, the owner has the comfort of knowing that the contractor's price includes all elements shown in the construction documents. Pricing is usually in the form of a fixed or "lump sum" amount,[8] so there is little ambiguity as to the contractor's pricing commitment. Assuming the availability and interest of multiple bidders for the project, the owner obtains competitive bids from qualified contractors and awards to the lowest responsive bidder, thereby maximizing price competition. There is also a certain sense of simplicity and ease of administration associated with this method,[9] which relies heavily upon the architect for all preconstruction and construction administration services. In addition, general contracting insulates the owner from the majority of subcontractor disputes and provides a single point of responsibility for the owner, at least with respect to construction activities on the project.

A principal disadvantage of this approach, however, is schedule. Because the design, bidding, and construction phases are linear and do not overlap, it generally takes longer to

complete a project using this method than with competing alternatives. The project also may suffer from the absence of any input from the ultimate contractor during the preconstruction phase. Issues that the contractor might have identified and then helped to resolve during the preconstruction phase may only come to light during or after the bidding process, leading to the possible need to redesign and rebid, subsequent change orders, or other causes of delay and cost overruns.

General contracting is also highly adversarial. Under this approach, the owner impliedly warrants to the contractor the adequacy of the plans and specifications.[10] This allows the contractor to submit its lowest and best price in reliance upon the fact that it will be paid for additional work that may be required as a result of errors or omissions in the construction documents. It is not necessarily the case, however, that the owner will be able to recover such costs from the architect or engineer responsible for producing the documents, since the design professional does not warrant the adequacy of its work product to the owner, but only agrees to perform in accordance with the applicable "standard of care".[11] The resulting difference in responsibility, sometimes referred to as the *Spearin* Gap,[12] is a frequent source of adjudication.

While "lump sum" bidding on complete documents may provide the lowest project cost, the inflexibility of this pricing mechanism has distinct disadvantages if used in the wrong setting. For example, in some cases, sufficient interest is not generated among qualified bidders to produce truly competitive pricing. In other cases, unusual or undefined project risks may create substantial pricing uncertainty. The result may be pricing that is artificially high due to the inclusion of excessive profit or extraordinary contingency.[13] On the other hand, the owner may be no better off if extreme competition produces bids that are unreasonably low or insufficient contingency is included in the bid. In the latter situation, the contractor may discover it is

operating at a loss and become highly motivated to explore every claim opportunity subsequent to contract award.

2. Separate or Multiple Prime Contracting

Under the separate or multiple prime approach to D-B-B contracting, the owner directly bids and holds the individual trade contracts. This method is occasionally mandated by public procurement laws and is frequently used in private industry where the owner employs experienced internal staff and prefers to manage the project through direct relationships with trade contractors.

One advantage of this method is that it can facilitate fast-track construction through the award of successive bid packages as elements of design are completed, thereby reducing the overall project schedule.

Moreover, by contracting directly with the individual trade contractors, the owner theoretically saves money through the elimination of the general contractor's fee, markup and general conditions costs. The disadvantage, of course, is that under this model, no single contractor guarantees overall project cost or time of completion. With the general contractor eliminated, the owner is no longer insulated from the direct claims of the various trade contractors, and management of those contractors, including scheduling and day-to-day field direction, either falls to the design professional or the owner's in-house staff.[14] As a result, these projects have great potential for coordination and scheduling failure, cost overruns, and significant litigation.[15]

B. Construction Management

The concept of construction management as a project delivery method dates back to the late 1950s and 1960s and the introduction of enhanced project scheduling methods for the

management of complex projects.[16] Two primary formats for employing the services of a construction manager ("CM") have emerged, and are differentiated by whether the CM takes risk for construction costs, *i.e.*, assumes financial responsibility for construction of the project.[17]

1. CM Not at Risk: Construction Manager as Adviser

The Construction Manager as Adviser or "CMa" project delivery format arose in the public sector as a response to the deficiencies in the multiple prime model caused by lack of effective management, and in the private sector where owners sought the services of a cost, constructability and scheduling consultant on a "fee for services" basis. In a typical setting, the CMa is engaged early in the preconstruction phase and works in tandem with the owner and architect, providing cost, constructability and scope review, bid packaging, and similar services.[18] The CMa facilitates the contractor bidding and selection process, and provides a broad range of construction phase services, including scheduling, site observation, payment application processing and closeout administration. In certain situations, the Construction Manager, referred to as CM as Agent, is authorized to act on behalf of the owner and enter into contracts on the owner's behalf, but without taking financial risk with respect to those contracts. In other cases, a CM who is precluded by law from "holding" trade contracts may nevertheless provide the owner with a GMP as a "financial accommodation."[19]

The perceived advantages of the CMa approach derive from the management expertise supplied by an independent and unbiased construction professional early in the project.[20] While CMa provides for enhanced management, the principal disadvantage is that the owner continues to hold the individual construction contracts, and the CM typically takes no financial risk for nonperformance of those contractors. Accordingly, the owner obtains no cost or schedule guarantee from a single party and is exposed to direct claims from multiple contractors.

2. CM At Risk: Construction Manager as Constructor

Under this model, the Construction Manager at Risk, referred to in AIA parlance as the Construction Manager as Constructor or CMc, provides preconstruction services similar to the CMa but, at a pre-determined point in time, agrees to become the at-risk contractor pursuant to a GMP agreement.[21] To avoid the inherent conflict of interest created by serving in the dual role of cost estimator during the preconstruction phase and the ultimate at-risk contractor, the GMP is typically based upon an "open book" pricing mechanism, whereby fee, general conditions and contingency are pre-established, and the actual cost of the work is fully documented and subject to audit.

The principal advantage of CMc is that it provides the owner with the benefit of the CM's management expertise during the preconstruction phase, while transferring performance responsibility to the CM once the GMP is established, thereby giving the owner the benefit of a price and schedule guarantee. The use of "open book" pricing moderates risk for both owner and CM, and permits the use of a carefully tailored contingency management plan.[22] This method also permits reduction of the project duration, since the GMP typically is established months before design is completed, thereby allowing the design and construction phases to overlap.

A disadvantage of CMc is that it requires the presence of a relatively sophisticated owner.[23] There is also risk of scope disputes arising with respect to the GMP. To achieve desired schedule reduction, the GMP is typically offered by the CMc based upon design documents that are anywhere from 35% to 95% complete (the "GMP Documents"). While the GMP is typically based upon what is "shown or reasonably implied" within the GMP Documents, significant issues can arise as to whether elements that later appear in the final construction documents were "reasonably implied" in the GMP Documents.[24]

A further disadvantage of CMc, and every other project delivery method discussed thus far, is that the owner is caught in the crossfire between the architect/engineer and contractor. Resolving this deficiency is the principal focus of the design-build project delivery method.

C. Design-Build Project Delivery

The design-build format has experienced remarkable growth over the past 25 years.[25] Under this approach,[26] the design professional responsible for preparing the plans and specifications works directly for the design-build entity responsible for constructing the project, as opposed to the owner. There are substantial variations on how this may be accomplished. One variable is the nature of the design-build entity itself,[27] while a second variable involves the "starting point" for the design-build effort, and whether a separate "criteria" or "bridging" consultant is involved.

1. Traditional Design-Build

Under this approach, the design-builder is responsible for both conceptual design and working drawings, and the degree of owner involvement in the process can vary dramatically. At one extreme, the design-builder simply may be provided with the owner's performance criteria and asked to locate and purchase an appropriate site, finance the project, and design and build the project in accordance with the owner's performance criteria (a so-called "turnkey" project because the owner's only obligation is to pay the design-builder and "turn the key in the door" at the conclusion of the project). Some entrepreneurial design-builders also assist the owner by maintaining a financial and/or operational interest in the project even after substantial completion.[28] Under a more common approach, the owner maintains responsibility for the property and project financing, develops specific design criteria, and then retains a design-

builder to complete the drawings in accordance with the design criteria and complete construction.

The most commonly cited benefit of design-build is that it provides a single point of responsibility for design and construction, removing the owner from the "communications crossfire," potential liability and administrative burden that results from being inserted between the contractor and design professional. This method promotes collaboration and teamwork between the design professional and contractor, who are now on the "same team," which may lead to innovative and cost-saving design and construction solutions. Design-build also facilitates fast-track construction, as it provides for the earliest possible price guarantee of any competing method, which means that construction can start very early in the design phase while still providing the owner with the assurance of an overall cost guarantee.

The principal disadvantage of traditional design-build is that the owner loses control of the design process, since the design professional's primary legal and practical allegiance is to the design-builder rather than the owner. This can create severe conflicts of interest during both the design phase and construction administration. An issue also arises as to selection of the design professional, as the owner may be inclined to base the selection on qualifications, whereas the design-builder may be more influenced by price.

2. "Bridging" Design-Build

Under the bridging design-build approach,[29] the owner first retains a "criteria" or "bridging" consultant, who is responsible for program confirmation and preparation of conceptual design documents up to, but not beyond, the design development phase (the "Bridging Documents"). The design-builder then offers a fixed price or GMP based on the Bridging Documents, completes design with its own architect of record and constructs the

project. The bridging consultant reviews the working drawings in process, but solely for conformance with the design intent of the Bridging Documents, and may act as the owner's representative during the construction phase. In most situations, the bridging consultant cannot serve as the architect of record.[30] In some situations, an engineer or other consultants may work for the bridging consultant in the first phase of the project and then shift to work for the architect of record after establishment of the GMP.[31]

The purpose of bridging is to derive the benefits of design-build listed above, while minimizing the disadvantages. During the design phase, the owner controls the design process, which can be very successful so long as all critical design elements are documented in the Bridging Documents. Moreover, the bridging consultant assures that the construction documents in process conform to the intent of the Bridging Documents. For the most part, issues of design liability arise with respect to the construction documents, which are solely the responsibility of the design-builder, and the risk of errors or omissions is effectively shifted under this method.

In Ohio, the "bridging" design-build method recently provided a unique opportunity for project success. The $465 million Cleveland Medical Mart and Convention Center Project ("CMMCC")[32] was originally proposed in 2007 as a combined medical device/technology showplace and convention center project located in Cleveland Ohio, but development was stalled as issues pertaining to funding and site location dragged through the political process. As months passed, competing projects in Nashville and New York City were announced, so timing became critical to ensure that the project was "first to market." The public owner (Cuyahoga County) originally envisioned a linear design and construction process in order to achieve pricing certainty, but significant time would have been lost if construction could not start until after the design was completed and pricing was determined. Moreover, as the project refocused in the

Winter of 2009/2010, it became clear that the owner could take advantage of significant tax exempt financing provided by the American Recovery and Reinvestment Act of 2009 if all required project agreements could be in place prior to December 31, 2010, including a GMP agreement based upon design development documents (approximately 35% complete design) with a responsible builder. Because Ohio was a "multiple prime" state for public construction in 2010,[33] this task could not be accomplished unless an innovative approach was adopted. The solution was to interpose a developer between the public owner and builder, which would permit an alternative delivery approach. In this case, the decision was to adopt a bridging design-build project delivery format.[34] Using this method, a GMP agreement with a design-builder was established, and financing closed in December 2010. As of the date of this article, the project is on budget and on schedule for timely completion in August 2013.

III. SELECTION CRITERIA: PROJECT CONSTRAINTS AND OTHER DETERMINATIVE FACTORS

For an effective project selection process, two sets of information must be developed. First, owners must evaluate information pertaining to project parameters and goals. For example, it is critical to understand the nature of project ownership, funding sources, project location (including details of property acquisition), project budget and schedule, and critical programmatic elements. Second, it is necessary to catalog those constraints that will necessarily limit the choice of project delivery alternatives given the owner's project parameters. This typically involves an evaluation of legal, financing and timing constraints, as well as consideration of the project type, and management style and capability of the project owner. Upon limiting the universe of possible project delivery systems based upon applicable constraints, the advantages and disadvantages of possible systems are evaluated to select the best possible alternative. A suggested process for performing this evaluation is discussed in

Section IV. The following are some of the more common constraints and selection considerations that inform the decision making process.

A. Legal Constraints—Public vs. Private Owners

A threshold question on virtually every project is whether public ownership or funding is involved. While legal restrictions impacting project delivery in the private sector are limited,[35] the "strings attached" to public sector contracting may range from limitations on procurement methodology to the imposition of contract requirements that promote social policy.[36] Some jurisdictions have adopted laws that mandate multiple prime contracting to the exclusion of any single prime approach,[37] while others limit the use of construction management to the adviser model,[38] and/or preclude or restrict the use of design-build or the design-assist methodology.[39] In addition, many jurisdictions impose strict competitive bidding[40] and bonding requirements[41] that limit the use of "best value" selection or negotiated agreements.[42] The extent to which the foregoing restrictions also extend to public/private partnerships is totally dependent upon the partnership structure and the laws of the jurisdiction.

Nowhere has the impact of legal constraints been more evident than in the author's home state of Ohio. Prior to the enactment of construction reform, most public procurement for projects in excess of $50,000 had to proceed on a multiple prime basis with or without the services of a CM as Adviser. The state specifically outlawed the use of single prime contracting, CM at Risk, design-build and design-assist.[43] Fortunately, the Governor of Ohio created a construction reform panel in 2008 that prepared a series of project delivery recommendations that were adopted into law on June 30, 2011, and became effective January 1, 2012.[44] As a result of the new law, public authorities in the State of Ohio will be able to utilize general contracting, CM at Risk, design-build and design-assist for the first time in over 135 years.[45]

B. Funding and Cost Constraints

Project owners typically rely upon external sources for project finance. The funding source will normally place conditions upon the use of its money that may impact aspects of project delivery. For example, there are many projects where a total project construction cost must be known and guaranteed by a party capable of providing such a guarantee prior to commencement of construction and/or release of funds. In some cases, that requirement is established by the owner itself, as a public or private owner may simply be unwilling to move forward until such a guarantee is obtained. In other circumstances, the requirement is imposed by the lender, or as a condition of bond financing. Where a price guarantee is required, certain project delivery systems, such as multiple prime or CM as Adviser, are eliminated, as no single party offers an overall price guarantee under those formats. As discussed in Section III.C., the timing of the guarantee alone may dictate the preferred project delivery approach.

Aside from the price guarantee, a funding source may impose a number of other constraints that require special adaptation to the project delivery method.[46] In some circumstances, the driving factor for the owner's project delivery selection is the perception that one method will produce the lowest overall project cost. The analysis of project cost is tricky, however, as the cost at the time of bid or initial negotiated contract may be very different from the ultimate cost once the risk of claims and changes are fully considered.[47] For a given project, each project delivery method involves a somewhat different design fee, general conditions cost, contingency cost (depending upon when in the process the contingency is determined) and opportunity for savings and/or return of contingency dollars for use on other aspects of the project. As discussed in Section IV.A., the variable costs of comparable systems should be

presented during the course of a project delivery workshop, together with the potential for cost savings and the risk assumed by the owner for potential cost overruns.

C. Timing Constraints

A project may face strict deadlines with respect to a variety of key milestone dates. Typical milestones include the date by which financing must be obtained, the fixed price or GMP established, construction commenced, substantial completion achieved, and building operations begun. For example, an owner may have an absolute obligation to commence operations in a new facility by a date certain because an existing facility may no longer be available or operational, as with sports facilities, convention centers and other community impact projects.[48] Commencement of operations may be key to make the business plan successful, as with manufacturing or healthcare facilities. As discussed above, it may be necessary to enter into a fixed price or GMP contract by a prescribed date to satisfy financing or other commitments.[49] In other situations, achieving milestone dates, such as completion of design and commencement of construction, may be critical to discouraging competing projects in the market from going forward. The amount of time required to achieve each of the foregoing milestone dates may vary substantially depending upon which project delivery system is selected.[50] As discussed in more detail in Section IV.A., the critical timing exercise that takes place in the project delivery workshop lines up theoretical project schedules and compares those schedules with the relevant milestone dates to assist the owner in making an appropriate project delivery selection.

D. Facility Type

Certain facility types are better suited for different project delivery methods.[51] For example, many infrastructure projects, such as water and sewage treatment plants, are well suited for design-build, particularly utilizing an Engineering, Procurement and Construction ("EPC")

form of contract. Design-build also works well for structured parking, as the owner can establish design criteria and leave it to the design-builder to design and construct the parking deck to satisfy the criteria with minimal owner involvement. CM at Risk works well for complex facilities, such as hospitals, where significant CM involvement is desirable during the preconstruction phase, a GMP is desirable, and a high level of owner involvement in change orders and contingency management is commonplace due to the need to implement late breaking technology, such as radiological equipment. Roadway construction is well suited to unit price contracting, and agency CM is often successful with respect to routine school projects.

E. Owner's Management Profile

The owner's management profile is an amalgamation of a number of factors, including in-house expertise, tolerance for risk, desire to maintain pre-existing relationships, and approach to "design control." An evaluation of these factors is frequently determinative of the project delivery selection.[52]

1. In-House Expertise, Tolerance for Risk and Pre-Existing Relationships

Some project delivery systems require far more owner involvement and expertise than others. Whereas a turnkey design-build or simple general contractor project requires modest expertise and involvement, much more is required in the multiple-prime, CM at Risk or bridging design-build setting. At a minimum, if an owner expects to benefit from an "open book" GMP as opposed to lump-sum pricing, it must be capable of providing a detailed review and evaluation of the GMP proposal and each pay application.

The issue of owner expertise also relates to risk tolerance. For example, a multiple-prime delivery system does not effectively consolidate risk with a single party, nor does it transfer risk from the owner's side of the equation. In many cases, such projects are plagued by lack of

coordination, ineffective schedule control, delays and cost overruns. Nevertheless, certain institutional and commercial owners possess sophisticated in-house scheduling and management capability sufficient to mitigate such risk, and demonstrate substantial cost savings by pursuing multiple-prime options and eliminating the need to retain a general contractor, CM or design-builder. In such cases, the owner may also rely upon its pre-existing relationships with a select group of trusted contractors who perform work on a repeat basis and do not present the risk of adjudication as issues are normally resolved on the basis of the business relationship. Many organizations enter into master agreements with trusted contractors for routine maintenance, capital repair and smaller capital improvement projects. The master agreement contains all terms and conditions of the engagement and the pricing formula for the relationship, but separate projects are awarded on a task order basis.

2. The Owner's Approach to "Design Control" and Ability to Resist Making Late Changes

While most owners insist upon maintaining absolute control of conceptual design, a critical project delivery question is whether the owner is prepared to issue timely approvals of design documents with the ability to "put the pencil down" and refrain from requesting changes once the design is approved and progresses beyond a particular phase.[53] If the GMP on a bridging design-build project is based upon design development documents, it is incumbent upon the owner to organize its stakeholders, including user groups and those involved in facilities management, to make sure that all design concepts are clearly expressed in the design development documents.[54] Once the GMP is accepted, there is a high cost associated with owner-generated changes. For this reason, some owners prefer to utilize a CM at Risk process solely because the GMP is not created until the documents are 75% or more complete, and there is less cost associated with making changes late into the construction documents phase.

Although the owner of such a project proceeds without the comfort of a GMP for a longer period of time and assumes the ultimate risk associated with the *Spearin* gap discussed in Section II.A., the owner will nevertheless have a longer duration during which to make final design changes with less overall impact.

IV. PROJECT DELIVERY WORKSHOP

Given the importance and complexity of project delivery selection, it is surprising that owners often spend little time considering their alternatives. Most project stakeholders, however, benefit from participation in a project delivery workshop conducted at the outset of the planning process.

The author has had the privilege of conducting project delivery workshops, or otherwise participating in the project delivery selection, for a number of community impact projects, including more than 15 professional sports stadium and arena projects. These exercises have resulted in the use of a variety of methods based upon the idiosyncrasies of each project. In most cases, however, determination of the appropriate delivery method was arrived at only after application of specific criteria as discussed in the workshop setting. Ideally, the process occurs even before the owner engages the design professional, or at least before the owner commits to a particular process by agreeing to the design professional's standard form of agreement. The remainder of this section describes a typical stadium project workshop, as well as a university-wide program delivery workshop.

A. Stadium Project Delivery Workshop

At the outset of a stadium project workshop, the owner's goals are first reviewed and confirmed by all stakeholders. This is followed by a review of relevant legal, financing and timing constraints that restrict the possible project delivery options given the owner's goals. For

example, there may be a requirement for a price guarantee prior to commencement of construction, but insufficient time for a traditional D-B-B process. By way of example, for both the new Amway Arena in Orlando and Marlins Park in Miami, the workshop participants quickly determined that the only two viable options that survived the initial test were CM at Risk and bridging design-build.[55] With the field narrowed to these two choices, a side-by-side comparison was conducted of various criteria important to the owners. Schedules and cost models for each option were developed and compared. Multiple factors were then graded and scored on a "project delivery scorecard," including the following:

- Time to fixed price
- Time to project completion
- Quality of management of schedule risk
- Probable initial cost
- Probable final cost
- Quality of management of cost, risk and opportunity for contingency management
- Assurance of owner program
- Quality of finished work
- Impact of owner changes (including late design due to "sponsorship" deals)
- Quality of dispute control

In addition, special considerations were discussed and evaluated. For example, on the Marlins project, which features a retractable roof, the following factors were of unique importance:

- The comfort level and experience of the owner's representative with competing project delivery systems
- Certain commitments that had been made to the architect/engineer prior to the project delivery workshop
- Concerns about the owner's ability to limit its "appetite for change" after the GMP Documents were produced
- A critical issue with respect to shifting engineering responsibility for the retractable roof [56]

At the conclusion of this process, the scoring was reviewed and a reasoned delivery decision was made to use CM at Risk in the case of both Florida projects.

It should never be assumed that a particular project delivery system should be used until a meaningful review is conducted. Evidence of this point is provided by the fact that the same workshop process has been conducted at the commencement of many comparable stadium and arena projects with different results, depending on the unique characteristics of the given project. For example, bridging design-build was selected for Busch Stadium in St. Louis and PNC Park in Pittsburgh; traditional design-build for Oracle Arena in Oakland; the "continuation bridging design-build" method for the new 49ers football stadium in Santa Clara, California; CM at Risk for Target Field in Minneapolis, Nationwide Arena in Columbus, and Consol Energy Center in Pittsburgh; CM as Adviser for Jacobs Field (now Progressive Field) and Gund Arena (now Quicken Loans Arena) in Cleveland; and CM as Adviser (with a GMP offered as a financial accommodation) for Fifth Third Ballpark and Lucas County Arena in Toledo, Ohio.

B. "Program-Wide" Project Delivery Workshop

The Ohio State University (the "University") possesses one of the largest campus systems in the United States, with the main campus in Columbus alone serving over 55,000 students. Its Facilities Operations and Development group is responsible for overseeing in excess of $240 million in capital improvements per year, involving hospitals, dormitories, classrooms and laboratory facilities, sports venues and similar projects. Prior to 2012, all projects were required to be performed on a multiple-prime basis, which led to enormous frustration and loss of opportunities for the University administration. With the advent of construction reform in 2012,[57] general contracting, CM at Risk and bridging design-build suddenly became available, but the University was faced with the problem of developing an immediate methodology to (1) transition some projects to the new project delivery systems, and (2) categorize and assign hundreds of future projects to the newly available methods.

To accomplish this task, the University is conducting a series of project delivery workshops involving over 80 project administrators and contracting staff who work throughout the University system. Workshops in late 2011 were dedicated to training personnel in the new systems, and engaging them in facilitated exercises to adopt the new models. Initially, breakout groups were asked to identify past projects that could have benefited from the new project delivery systems, and to evaluate aspects of those projects that might have been both positively and negatively impacted. The groups then began the process of identifying criteria for selecting each of the project delivery models, which included schedule, design complexity, project management capability and needs of University users and clients. Follow-up sessions were dedicated to creation of a selection matrix and determination of the roles and responsibilities for project managers, contract officers and University clients for each delivery model. These sessions are scheduled to occur over a several-month period, with completion of the group's work by April 2012, allowing the University to implement the new delivery models at the same time the State of Ohio completes and authorizes applicable administrative rules and contract forms.

V. PRACTICAL TOOLS FOR MITIGATING PROJECT DELIVERY RISKS

Every project delivery system has limitations and risks that can be mitigated through the application of good process. The following are two tools that the author has found to be particularly effective.

A. The Risk Management Matrix

On sophisticated projects, it is useful for the owner to develop a project risk management matrix. This matrix is used to catalogue and quantify each project risk, and develop a comprehensive strategy to either abate risk (*i.e.*, minimize risk with corrective systems and

processes), allocate risk (*i.e.*, establish a fair sharing of risks and rewards among the owner, design professional and contractor), or transfer risk (*i.e.*, place risk with the entity most capable of absorbing the risk). The typical risk matrix lists the universe of project risks for which stakeholders have greatest concern on the "X" axis, and then provides a range of possible remedies on the "Y" axis, including: (a) an indication of which parties have primary and secondary responsibility, (b) a listing of contractual, insurance and process remedies, and (c) an identification of applicable project contingencies and other financial remedies. The risk matrix can be quite comprehensive[58] and provides an excellent tool for (1) identifying and filling gaps in the project delivery system, (2) convincing lenders and rating agencies that project risks have been identified and addressed, and (3) identifying remedies during the course of the project.

B. Facilitated GMP Process

The use of a GMP can produce great benefits for a project. It provides the owner with the opportunity to obtain an early price guarantee that can secure financing and other commitments while permitting the contractor to commence construction before design is completed.

Unfortunately, one of the principal problems inherent to GMP establishment is the uncertainty of the scope of work upon which the GMP is based. By definition, the GMP is based upon incomplete documents. When the final construction documents are released months after the GMP is established, disputes typically arise as to new details that appear in the final document set. It is not uncommon for the contractor to argue that a detail constitutes "new scope" which was not indicated in any fashion in the GMP Documents and which, therefore, constitutes the basis for change order requiring the payment of additional compensation and/or the granting of an extension of time. The owner will vehemently argue that it was the

contractor's obligation to anticipate the detail because it was "reasonably inferable" from the GMP Documents.

Long experience has demonstrated that this issue cannot properly be resolved by contractual language that purports to shift risk, as such an effort only leads to the creation of real or hidden contingencies and allowances that drive up project cost. This problem can be effectively addressed by good process and, in particular, by use of the "Facilitated GMP" or "Prose Process." This six-step procedure (described in the endnote to this sentence) has been successfully employed on several of the projects discussed in this article.[59]

VI. CONCLUSION

There is no "best" or "one size fits all" project delivery system. It is important that a deliberate project delivery evaluation and selection process be conducted at the outset of every project. Hopefully, the information and tools presented in this article will assist the construction professional or project counsel to effectively perform that task.

ENDNOTES

[1] The author wishes to acknowledge the efforts of Heather Stakich, an associate at Thompson Hine LLP, who assisted with the preparation of this article. Commencing in Section II, the article refers to various projects, including the Cleveland Medical Mart and Convention Center, Flats East Bank, several stadium and arena projects, and work for The Ohio State University. The author served as project counsel or management consultant for those projects, and information contained in the article regarding those projects was obtained from the author's records.

[2] For discussions about the meaning of "project delivery systems," *see*, The Architect's Handbook of Professional Practice, Volume 1, 14 ed., Joseph A. Demkin, AIA executive editor. The American Institute of Architects Press, 2008; *Primer on Project Delivery*, The American Institute of Architects and The Associated General Contractors of America, 2004; *Airport Owners' Guide to Project Delivery Systems*, Airports Council International-NA, Airport Consultants Council and the Associated General Contractors of America, October, 2006; Ireland, V., *Virtually Meaningless Distinctions Between Nominally Different Procurement Methods*, 1982.

[3] Other critical factors related to project success include: (a) a knowledgeable, trustworthy and decisive owner; (b) a project team with relevant experience and good chemistry assembled prior to 20% completion of design; and (c) contracts that encourage and reward project participants for behaving as a team. *See*, Victor Sanvido and Mark Konchar, *Selecting Project Delivery Systems: Comparing Design-Build, Design-Bid-Build, and Construction Management at Risk*, The Project Delivery Institute, 1999, reprinted with additions 2005; Joint Committee of the American Institute of Architect (AIA) and the Associated General Contractors of America (AGC), Primer on Project Delivery, Washington D.C., AIA and AGC, 2004.

[4] *Williams Engineering, Inc. v. David Goodyear*, et al, 496 So. 2d 1012; 1986 La. LEXIS 7472.

[5] See AIA B201-2007 (Standard Form of Architect's Services) Section 2.2.2: "The Architect shall prepare a preliminary evaluation of the Owner's program, schedule, budget for the Cost of the Work, Project site, and the proposed procurement or delivery method and other Initial Information, each in terms of the other, to ascertain the requirements of the Project. The Architect shall notify the Owner of (1) any inconsistencies discovered in the information, and (2) other information or consulting services that may be reasonably needed for the Project."

[6] The integrated project delivery or IPD model involves a multi-party contract, typically among the owner, the design professional and one or more contractors. The multi-party contract provides for the joint development of project goals and sharing of project risks and rewards. Project targets are developed by the IPD team and each party's profit and risk is tied to achievement of those targets. Critical elements of IPD are: early involvement of key participants, jointly developed and validated project goals, shared risks/rewards among team members, collaborative decision making by the owner, design professional and contractor, and reduced liability exposure among key participants.

Like the other project delivery models, IPD has positive and negative implications. IPD promotes collaboration among team members and, through the reduced liability exposure and sharing of project rewards, provides incentives for resolving issues rather than creating disputes that exacerbate cost overruns and delays. IPD requires a radical departure from traditional project delivery models and there may be an adjustment period for those participants who are accustomed to operating in a more conventional (and adversarial) setting. In such instances, the benefits of collaboration gained through IPD are lost because of misaligned goals of the team members—without buy-in by the key participants, IPD projects fail. Finally, although there are economic disincentives for each team member for failure to meet project objectives, the owner ultimately bears the risk of the cost of project failure without recourse against its design professional or contractor.

[7] Under the AIA approach, design progresses through a series of three iterative phases once the owner's program has been mutually agreed upon. Those phases result in the preparation of schematic design documents, which, at a minimum, consist of "line drawings" and other documents that illustrate the scale and relationship of project components (AIA Document B201-2007, §2.2.5); design development documents, which illustrate and describe the refinement of the design of the project, including materials, systems and quality levels (AIA Document B201-2007, §2.3.1); and construction documents, which set forth in detail the requirements for construction of the project, including the construction drawings and specifications (AIA Document B201-2007, §2.4.1). In an ideal world, the owner's involvement in the conceptual design process is completed by the conclusion of the design development phase, when all critical design decisions are reflected in the design development documents. Accordingly, the construction documents phase involves the technical translation of design decisions reflected in the design development documents into drawings and specifications that can be utilized by the contractor for construction.

[8] For traditional lump sum contractor agreements, see AIA Document A101-2007 (Standard Agreement between Owner and Contractor—Stipulated Sum); and AIA Document A107-2007 (Abbreviated Owner-Contractor Form for Construction Projects of Limited Scope—Stipulated Sum). For an example of a contractor agreement based on a GMP, see AIA Document 102-2007 (Standard Form of Agreement Between Owner and Contractor—Cost Plus Fee, With a GMP). The AIA Document A201-2007 (General Conditions of the Contract for Construction) is used with both lump sum and GMP contracts. The AIA also offers a cost plus fee agreement where the owner and contractor do not agree to a GMP, but that is rarely used. *See* AIA Document A103-2007 (Standard Form of Agreement Between Owner and Contractor—Cost Plus Fee, Without a GMP).

[9] By contrast, far more administrative effort is required where an open book, GMP pricing method is used. *See, infra*, Section II.B.2.

[10] As initially promulgated in *United States v. Spearin*, 248 U.S. 132 (1918), the *Spearin* Doctrine provides that a construction project owner impliedly warrants to the contractor the accuracy, completeness, and suitability of project plans and specifications. This doctrine has been adopted in nearly every state in the union. *See,* Dwight A. Larson and Kate A. Golden, *Entering the Brave, New World: An Introduction to Contracting for Building Information*

Modeling, 34 Wm. Mitchell L. Rev. 75 (2007), which includes a discussion of concerns brought about by the use of building information modeling and its implications on the *Spearin* Doctrine.

[11] Under industry standard documents and applicable common law, the design professional is only liable to the extent that it fails to meet the professional "standard of care." *See*, *e.g.*, AIA Document B201-2007, § 1.2: "The Architect shall perform its services consistent with the professional skill and care ordinarily provided by architects practicing in the same or similar locality under the same or similar circumstances. The Architect shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project." From time to time, an owner will prevail upon a design professional to elevate the standard of care provision (for example, by inserting the requirement to "perform to the highest standard of practice") only to learn that professional liability coverage afforded to the design professional or the project will not provide coverage for the increased exposure.

[12] Since the architect/engineer only agrees "not to be negligent," a "gap" arises between the owner's obligation to the contractor, as established by *United States v. Spearin*, and the architect/engineer's obligation to the owner. The risk of issues "falling into the gap" resides with the owner, and it is incumbent upon a responsible owner to maintain a financial contingency to deal with such issues.

[13] A negative consequence of lump sum pricing is that it forces contractors to include contingencies in their prices without giving the owner the ability to recoup those contingencies if they are not realized. There is no sharing of cost savings, or other method to more carefully tailor pricing to match the contractor's actual experience. By contrast, "open book " pricing, discussed *infra*, Section II.B.2., provides such an opportunity.

[14] Some public owners attempt to remedy this situation by assigning scheduling and coordination responsibility to one of the prime contractors (typically the general trades contractor) who becomes known as the "lead contractor."

This model is frequently ineffective because the lead contractor does not have contractual control over other multiple prime contractors. Additionally, the "lead contractor" is faced with a conflict of interest when tasked to schedule the activities of its own subcontractors (for whom the lead contractor takes risk) alongside the activities of other multiple prime contractors (for whom the lead contractor takes no risk).

[15] *See*, *e.g.*, Victor Sanvido and Mark Konchar, *Selecting Project Delivery Systems: Comparing Design-Build, Design-Bid-Build, and Construction Management at Risk*, The Project Delivery Institute, 1999, reprinted with additions 2005; and Stephen R. Thomas, Candace L. Macken, Tae Hwan Chung and Inho Kim, *Measuring Impacts of the Delivery System on Project Performance—Design-Build and Design-Bid-Build*, U.S. Department of Commerce Technology Administration National Institute of Standards and Technology, November, 2002.

[16] Robert C. Mutchler, *Construction Management*, Section 11.4, page 501, The Architect's Handbook of Professional Practice, Fourteenth Edition, Joseph A. Demkin, executive editor, 2008.

[17] For a discussion of the role of the CM as the owner's agent, whether under an adviser or at risk model, and regardless of whether the CM takes cost risk, *see* Tymon Berger, *Drawing the Line: A Proposal for Limiting the Form and Function of Construction Manager Project Delivery*, 34 Wm. Mitchell L. Rev. 153 (2007).

[18] For an example of a Construction Manager as Adviser form of agreement, see AIA Document C132-2009 (Standard Form of Agreement Between Owner and Construction Manager as Adviser). This contract is used in conjunction with the AIA CM as Adviser family of documents, including AIA Documents A132-2009 (Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition); A232-2009 (General Conditions of the Contract for Construction, Construction Manager as Adviser Edition); and B132-2009 (Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition).

[19] In situations where the owner is legally required to hold the trade contracts, the owner may nevertheless receive a GMP as a "financial accomodation" from the CM. In such situations, the CM manages the construction process, but trade contracts are held by the owner. The CM is permitted to make all critical decisions on behalf of the owner in order to control the project, but also agrees to indemnify and hold the owner harmless for direct claims of trade contractors. The owner enjoys the benefit of the GMP, and the CM receives an enhanced fee for this service.

[20] The CM acts as an extension of the owner's staff, augmenting the owner's own resources to help manage cost, time and quality. The CM provides independent scheduling functions absent in the multiple prime process, and provides an independent point of view regarding constructability, budget, value engineering and contractor selection.

[21] For an example of a Construction Manager at Risk form of agreement, see AIA Document A133–2009 (Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price).

[22] Under a typical contingency management plan, the CM's (or design-builder's) contingency at the time of GMP is set at a fixed amount (*e.g.*, 5% of the cost of work), but is subject to modification as the project proceeds. As various trade contracts are "bought out," buyout savings are added to contingency and buyout losses are subtracted. At a predetermined point in time (*e.g.*, when trade contracts are 95% bought out and foundations are complete), the CM or design-builder agrees upon a reduction of contingency above a pre-established amount (*e.g.*, 2.75%), subject to increase for any identified claims. Contingency dollars above that threshold are released and utilized to procure pre-established add alternates for which the CM or design-builder receives a contractually mandated fee. In this way, at least some savings can be effectively incorporated into the project.

[23] For example, there is no point in mandating the use of "open book" pricing if the owner does not possess or retain the sophistication to review the potentially voluminous backup information supplied with each monthly pay application. *See, infra*, Section III.E.

[24] There is much debate about the "sweet spot" for design completion under this model. On sophisticated projects, if design is too sketchy, the CMc's qualifications, assumptions and allowances may be too broad to support a meaningful price guarantee. On the other hand, if the GMP is not established until the construction documents are nearly complete, there may be too little time and flexibility to make necessary revisions as a result of the GMP formation exercise. In our experience, the "sweet spot" for GMP formation on most sophisticated projects is approximately 60-75% design, provided that a facilitated process, as described *infra*, Section V.B., is employed to mitigate the risk of a scope dispute.

[25] A 2011 study commissioned by the Design-Build Institute of America (DBIA) and completed by RSMeans Reed Construction Data Market Intelligence showed that design-build was used on more than 40% of non-residential construction projects in 2010, a 10% increase since 2005. The study found that between 2005 and 2010, the use of design-build increased for projects of all sizes, but its rise was particularly drastic on projects with costs above $10 million, where design-build was the delivery method on more than half of the projects. *See also*, "Design-Build Project Delivery Used for More Than 40 Percent of Non-Residential Construction Projects, Report Shows," DBIA, June 2011.

While a high percentage of projects are being completed using design-build, there are still fewer owners using design-build than D-B-B. According to one study, design-build is used by only 17% of owners on the majority of their capital construction projects, which is up from under 10% in 2005, but still much less than the number of owners primarily using D-B-B, which is 54%. Bruce D'Agostino, Marise Mikulis,and Mark Bridgers, *The Perfect Storm—Construction Style*, FMI/CMAA Eighth Annual Survey of Owners, 2007.

[26] Various organizations have prepared integrated contract forms for use on design-build projects, including Engineers Joint Contract Documents Committee (EJCDC) and Federation Internationale Des Ingenieurs-Conseils (FIDIC). The American Institute of Architects substantially revised its former approach to design-build (which was often criticized because of its inflexible two-step approach) and issued revisions in March 2005. The new document set includes AIA Document A141-2004 (Agreement Between the Owner and Design-Builder), AIA Document B143-2004 (Standard Form of Agreement Between Design-Builder and Architect), and AIA Document A142-2004 (Standard Form of Agreement Between the Design-Builder and the Contractor). In addition, the new documents include AIA Document B142-2004 (Agreement Between Owner and Consultant Where Owner Contemplates Using the Design-Build Method of Project Delivery), which is a contract between the owner and a design professional who can perform a number of tasks, including development of project design criteria. Thus, the new AIA documents accommodate the "bridging" approach to design-build discussed *infra*, Section II.C.2.

[27] Some of the possibilities are as follows:

1. Contractor as Design-Builder: The owner contracts with a traditional contractor or construction management firm that, in turn, engages a design professional. There is no privity of contract between the owner and design professional. The preponderance of design-build projects performed in the United States currently utilize this method.
2. Design Professional as Design-Builder: The owner contracts with a design professional who, in turn, engages the contractor(s) required to construct the project. There is no

privity of contract between the contractors and the owner. This method is relatively rare and presents an unusual risk management challenge, since the design professional shoulders 100% of design-build risk, although the value of the actual services it provides typically represents less than 10% of the entire design-build effort.

3. Integrated Design-Build Firm: An integrated firm possessing "in-house" design and construction capability contracts with the owner.
4. Joint Venture or Limited Liability Company: A traditional contractor or construction management firm joins forces with a design professional to provide design-build services.

[28] For example, the "build-operate-transfer" approach is frequently used as a form of project financing in certain revenue-producing public projects, such as toll roads, dams, water treatment plants, and even correctional institutions. The private entity will receive a franchise from the public entity to finance, design, build and operate a facility for a specified payback period, after which the facility is transferred to the public entity. The private entity recovers its investment through facility user fees, tolls or rent.

[29] The bridging design-build approach is accommodated by the new AIA family of design-build documents as described in Endnote 25.

[30] *See*, for example, Fla. Stat. § 287.055(9)(b) and Ohio Rev. Code § 153.694; but note that under some hybrid approaches, the bridging consultant may be eligible to serve as architect of record. This is referred to as the bridging "continuation" model and is currently being utilized on the San Francisco 49ers new football stadium project, construction of which will commence this Spring in Santa Clara, California.

[31] This method was successfully used for the new Busch Stadium in St. Louis that was completed in 2006.

[32] The project is approximately 1,000,000 square feet and includes an underground convention center, ballroom and meeting room facility, and an attached four-story medical industry showplace. The project is primarily paid for through a countywide, quarter-cent sales tax and a slight increase in bed tax. The facility is predicted to attract both medical and nonmedical meetings and conventions, resulting in $330 million of annual spending in the downtown Cleveland market.

[33] As described *infra*, Section III.A., Ohio adopted new legislation on July 1, 2011 (that took effect after January 1, 2012) that permits, for the first time, general contracting, construction management at risk, design-build, and design assist to be utilized on public projects.

[34] From a financing perspective, multiple prime contracting could not be utilized due to the need to obtain a fixed or guaranteed price from a single party. The single prime (or general contractor) D-B-B method was unavailable as there was insufficient time to prepare complete plans and specifications prior to obtaining a guaranteed price. While a construction management at risk approach was theoretically possible, it was not optimal because of the need to establish a GMP at the conclusion of design development, or approximately 35% complete design, to meet the financing timetable. Even using the "facilitated GMP or 'prose' process," described *infra*,

Section V.B., construction management at risk produces better results if the GMP is taken at 60% to 75% complete design. On the other hand, the timing on this project was optimal for establishing a GMP under the bridging design-build approach.

[35] All projects, whether public or private, must comply with standard legal requirements that may impact project delivery. For example, design professionals must be properly licensed, and contractors may need appropriate certifications. *See generally* Stephen G. Walker, et al., State-By-State Guide to Architect, Engineer, and Contractor Licensing, 2011 edition, which is a comprehensive guide to architecture, engineering and contractor license laws for all 50 states and the District of Columbia. For a discussion about the differences between public and private legal requirements, *see* Justin Sweet, Sweet on Construction Law, Ch. 3 § 3.3, American Bar Association Forum on the Construction Industry, 1997.

[36] Public projects must properly allocate public funds, maintain the public trust, and deal with political concerns. Public scrutiny of the use of public funds exposes public agencies and officials to criticism and even liability. As a result, public agencies frequently allocate design and construction risks more conservatively than their private counterparts. In addition, public entities often must consider minority, female-owned and small business initiatives, preference for local companies, public works bonds, prevailing wage and other criteria that do not bind private owners. For a discussion of these issues, *see* Carl J. Circo, *Contract Theory and Contract Practice: Allocating Design Responsibility in the Construction Industry*, 58 Fla. Rev. 561, 591-595 (2006); Gene Ming Lee, *A Case for Fairness in Public Works Contracting*, 65 Fordham L. Rev. 1075, 1075-76 (1996).

[37] Michael K. Love and Douglas L. Patin, editors., State Public Construction Law Source Book, CCH Incorporated, 2002. As of early 2008, Nevada, New York, North Dakota, Ohio and Pennsylvania mandated multiple prime contracting for public projects. New York passed legislation, effective July, 2008, and, as discussed *infra*, Section III. A, Ohio passed legislation in 2011 that permits various project delivery methods for public construction projects. *See also*, *21st Century Construction, 20th Century Construction Law*, The Construction Law Committee of the Association of the Bar of The City of New York, February 2008, for a discussion of the reasons for permitting different project delivery systems for public projects and an analysis of various state statutes.

[38] For a compilation of state statutes, *see Construction Manager at-Risk State Statute Compendium*, The American Institute of Architects, AIA Government Affairs, 2005. While this document is a helpful resource, the compendium is limited in that it does not include administrative, regulatory, case law, or other actions that may authorize or limit the use of construction management at risk.

[39] For a compilation of state statutes, *see Design Build State Statute Compendium*, The American Institute of Architects, AIA Government Affairs, 2008. From 2001 until 2006, 928 new statues permitting design-build were introduced and 331 of them passed—a rate over 35%, which is far more than average for state legislation. Most of these statutes were driven by government agencies, cities and school districts—not industry professionals. Various federal laws have also been enacted, including the Federal Acquisition Streamlining Act of 1994, the National Defense

Authorization Act of 1996, The Clinger-Cohen Act of 1996 (adopting a two-phase selection process for design-builders on federal projects), and the Federal Acquisition Regulations of 1996 (amended in 1997 to incorporate design-build procedures). For a discussion of the increase in design-build legislation, *see* William G. Quatman, *Design-Build Legislation Sweeps the Nation*, AIA Architect, March 2, 2007.

[40] *See, e.g.*, Ala. Code § 41-16-20(a) (1975); CA Public Contract Code §§ 20161 and 20162; Mass. Gen. Laws Ch. 30B, §§ 5 and 6; Minn. Stat. §16C.28 (2011); Texas Public Property Finance Act § 271.027.

[41] For a state-by-state compilation of bonding requirements, *see* Stephen D. Butler, Laurence Schor, Esq., Robert F. Cushman, Esq., Fifty State Construction Lien and Bond Law, Second Edition, Aspen Publishers, 2000.

[42] Michael K. Love and Douglas L. Patin, editors., State Public Construction Law Source Book, CCH Incorporated, 2002; Louis F. Del Duca, Patrick J. Falvey, Theodore A. Adler, *Analytical Summary of State Enactments*, Annotations to the Model Procurement Code for State and Local Governments, 3rd ed., ABA Professional Education Publications, 1996; *21st Century Construction, 20th Century Construction Law*, The Construction Law Committee of the Association of the Bar of The City of New York, February 2008.

[43] For any project with a value over $50,000, Ohio Rev. Code §153.01 required full plans and specifications to be completed by a licensed design professional before an owner could bid the work to trade contractors. In addition, Ohio Rev. Code §153.50 required separate contracts to be bid for electrical, HVAC, plumbing and gas fitting contractors. This essentially outlawed construction management at risk, design-build and design-assist as possible delivery methods.

[44] In 2008, then Governor Strickland assembled a broad-based industry panel, known as the Ohio Construction Reform Panel, that included representatives from state agencies and universities, design and construction management associations, a private developer, the House and Senate Majority and Minority Caucuses, five separate trade unions and four separate trade contractor groups, to (a) review current design and construction laws and compare them to industry best practices, (b) provide recommendations to improve quality, cut costs for taxpayers and bring more value to the public construction process, and (c) define and outline the project delivery methodologies best suited to reform public construction in the State of Ohio. The author served as the Panel facilitator. The Panel was able to collaborate and achieve consensus among the competing interests, which ultimately led to the legislature approving the use of several additional project delivery options. *See* Report of the Ohio Construction Reform Panel, Advantage Ohio, April 2009.

[45] Ohio Rev. Code §§ 153.01 and 153.50 were revised in the new legislation to exclude projects with a CM at Risk or a design-builder. In addition, the sections added the ability for public owners to procure design-assist services.

[46] For example, 35 separate funding sources were utilized for the $272 million initial phase of the Flats East Bank project in Cleveland, Ohio. The public financing totaled $125 million and

included loans and grants from the federal, state, county, and city governments, a portion of which was enhanced by a Recovery Zone Facility Bond allocation. The private sources included loans through the EB-5 Regional Center Program and a union pension fund. Aside from the requirement that the owner obtain a GMP from the design-builder prior to release of funds and commencement of work, various sources had additional requirements and conditions, including prevailing wage/Davis Bacon; minority business, female business, local resident and other construction employment goals; complete environmental impact review of the project, including Section 106 historic review before construction commencement; and environmental remediation sufficient to secure a "No Further Action" letter prior to closing.

[47] A study conducted through the Construction Industry Institute (CII) analyzing 351 different facilities found that design-build projects experienced 5.2% less cost growth and had a unit cost of 6.1% less than similar projects delivered through D-B-B. Design-build projects experienced 12.6% less cost growth and had a 4.5% lower unit cost than CM at Risk projects. CM at Risk projects experienced 7.8% more cost growth, but had a 1.6% lower unit cost than D-B-B projects. One limitation of these findings, however, is that the study did not consider whether the projects used the most effective and efficient project delivery system for the particular project. *See*, Victor Sandvido and Mark Konchar, *Selecting Project Delivery Systems: Comparing Design-Build, Design-Bid-Build, and Construction Management at Risk*, The Project Delivery Institute, 1999, reprinted with additions 2005.

[48] A classic example was the construction of PNC Park in Pittsburgh, PA. PNC Park had to be completed by March 2001—33 months after choosing the project delivery system—in order to accommodate the planned demolition of Three Rivers Stadium for construction of the new Pittsburgh Steelers home, Heinz Field. A missed completion date would have left the Pittsburgh Pirates without a field to open their 2001 season. *See* Jeffrey R. Appelbaum, *PNC Park: Structuring a Successful Project Delivery and Risk Management Approach, segment of Guess Who's Coming to Town? Stadiums, Arenas, Malls and More: The Community Impact Project, Plenary Session I - Big Building Boom in the 'Burgh: Pirates, Steelers, Conventions and More*, American Bar Association, Forum on the Construction Industry, 2001 Annual Meeting, New Orleans, LA.

[49] *See*, for example, the discussion *infra*, Section II.C.2. regarding the Cleveland Medical Mart and Convention Center.

[50] A study conducted through the Construction Industry Institute analyzing 351 different facilities found that design-build projects took 33.5% less time to deliver and had 11.4% less schedule growth than similar projects delivered through D-B-B. Design-build projects were 23.5% faster and had 2.2% less schedule growth than similar CM at Risk projects. CM at Risk projects took an average of 13.3% less time and had 9.2% less schedule growth than similar projects delivered using D-B-B. *See*, Victor Sandvido and Mark Konchar, Mark, *Selecting Project Delivery Systems: Comparing Design-Build, Design-Bid-Build, and Construction Management at Risk*, The Project Delivery Institute, 1999, reprinted with additions 2005.

[51] The Construction Industry Institute Design-Build Research Team, *Project Delivery Systems: CM at Risk, Design-Build, Design-Bid-Build*, Research Summary 133-1, December 1997.

[52] For a discussion about the management challenges owners encounter when shifting from using primarily D-B-B to using more varied approaches of project delivery, *see* Edward G. Gibson, Jr., Giovanni C. Migliaccio, and James T. O'Connor, *Changing Project Delivery Strategy: An Implementation Framework*, Industry Studies Association Working Papers, 2007.

[53] One of the biggest challenges to on-time and on-budget project completion is getting timely approvals from owners, especially with regard to design. Generally, a lack of alignment among internal decision makers causes this problem. *See*, Victor Sandvido and Mark Konchar, *Selecting Project Delivery Systems: Comparing Design-Build, Design-Bid-Build, and Construction Management at Risk*, The Project Delivery Institute, 1999, reprinted with additions 2005.

[54] There are many projects where an owner has little need or desire to stay heavily involved in the design process once design or performance criteria is established. Such projects are typically well described by performance criteria and involve minimal aesthetic considerations, as with manufacturing facilities, simple parking structures or storage facilities. In those situations, it is often optimal to proceed on a design-build basis, as the owner has little interest in making changes to design once criteria is accepted and the design-builder commences work. In other situations, the owner is much more interested in controlling the design process, at least until the conclusion of design development. In those situations, more opportunity is provided to incorporate all relevant design concepts in the design package before commencing the technical preparation of working drawings. While it is still possible to perform such projects on a design-build basis, it is highly beneficial to utilize the bridging design-build method for such projects.

[55] Agency CM and multiple-prime were eliminated due to the requirement for a guaranteed price, and there was insufficient time for a traditional D-B-B process. Traditional design-build was also eliminated because Florida law dictates that the design professional responsible for preparing design criteria on a project receiving public funding cannot serve as the ultimate architect of record under the design-build approach. *See*, Fla. Stat. §287.055(9)(b).

[56] For the Marlins, it was critical that the engineer responsible for conceptual design of the retractable roof mechanism be permitted to complete construction documents. This would not have been permitted under Florida law.

[57] *See, infra*, Section III.A.

[58] For example, for the San Francisco 49ers new stadium project, the risk matrix identified 77 risks and included hundreds of cells identifying specific contractual, insurance, contingency and process remedies.

[59] The following are sample steps to a Facilitated GMP process on a CM at Risk project:

Step 1: At the outset of the Project, the owner, CM and architect agree upon the intended structure and content of the set of documents upon which the GMP will be based (the "GMP Set"). This should not be stated in terms of "overall percentage completion" (*i.e.*, 75% complete documents), but rather the parties should agree upon a specific listing of documents that will be included in the GMP Set.

Step 2: The parties proceed through the initial schematic design and design development phases and engage in customary cost estimating and cost reconciliation exercises.

Step 3: On a pre-designated date, the architect delivers to the CM the GMP Set, together with the "Prose Statement," which is a detailed narrative listing all of the incomplete design elements contained in the GMP Set and the architect's statement of intended scope with respect to such incomplete elements (including identification of all "quantities and qualities" that will appear in the final construction documents).

Step 4: Within 30 days after receipt of the GMP Set and Prose Statement, the CM submits its proposed GMP, including Qualifications and Assumptions based upon the GMP Set and Prose Statement, to the owner.

Step 5: The owner, architect and CM meet to reconcile discrepancies or disagreements relating to the GMP Set, Prose Statement, proposed GMP and GMP Qualifications and Assumptions. This reconciliation is performed by reviewing all documents during a facilitated session and coming to agreement as to statements contained in the Prose Statement and the CM's Qualifications and Assumptions. Agreements reached during this session are documented, and the Prose Statement and Qualifications and Assumptions are modified accordingly. The goal is to limit qualifications, assumptions and allowances, and refine scope.

Step 6: All parties review and sign off on the final Prose Statement and Qualifications and Assumptions, which are incorporated into an amendment to the GMP agreement.

The demonstrated impact of this process is to greatly reduce later misunderstandings, disputes and disagreements as to what was included within the GMP. The process is generally quite collaborative and leads to much closer working relationships among the parties.